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IS 11648 (1986): Nomenclature for modular machine tools
[PGD 3: Machine Tools]

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IS : 11648 - 1986

(Reaffirmed 2001)

Indian Standard

NOMENCLATURE FOR MODULAR MACHINE TOOLS

1. Scope — This standard is designed for the establishment of uniform nomenclature relative to machine type classification and basic components of modular machine tools and also to specify standardized work loading height for special purpose machines.

2. Definitions

2.1 *Modular Construction* — For unit construction or building block construction.

A machine constructed from standardized modules like machining units, slide units, feed units and structures like bases, columns, etc, to perform given operations on specific product or part.

2.2 *Related Units* — Certain modular units frequently employed in transfer machines are not defined in detail in this standard, because they are used for special applications. These units comprise height blocks, angular adaptors, horizontal angular adaptors, floor mounted columns (integral way or plain type), integral way wing bases (horizontal or angular) and angular wing bases. When these units are manufactured the interface dimensions and designations should be compatible with the standard unit which it is either replacing or to which it is being attached.

Components/units which are special to a particular type of machine may require further description, for instance rotary *centre base*, centre column *centre base*, trunnion *centre base*, etc.

2.3 *Workloading Height* — The dimensional requirements of modular machine tools are based on nominal workloading height of 1 060 mm. It should be noted that the height is measured from the underside of the machine and not from the floor on which the machine rests.

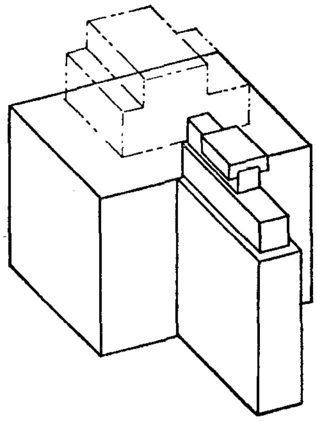
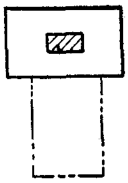
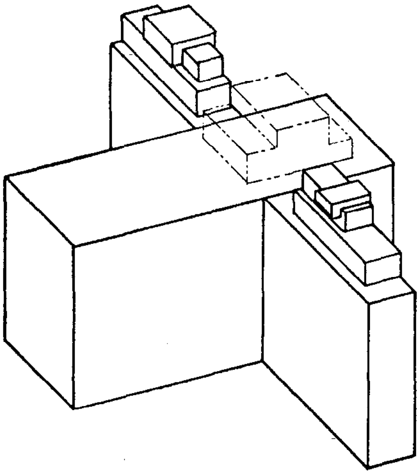
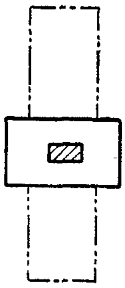
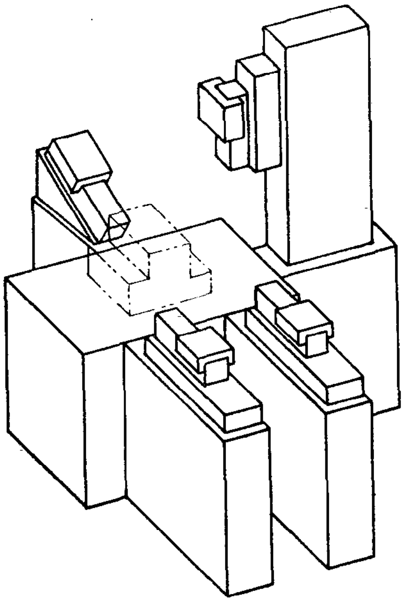
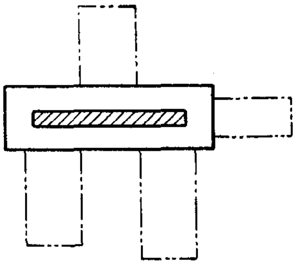
3. Machine Classification — Machine within the scope of the standard shall encompass two production machine classifications each consisting of sub-classifications.

Machine Tools, Machine Tool Elements and Woodworking Machines Sectional Committee, EDC 11; Modular Units for Machine Tools Subcommittee, EDC 11 : 12
[Ref : Doc : EDC 11 (3763)]

Adopted 28 February 1986 © April 1987, BIS Gr 4

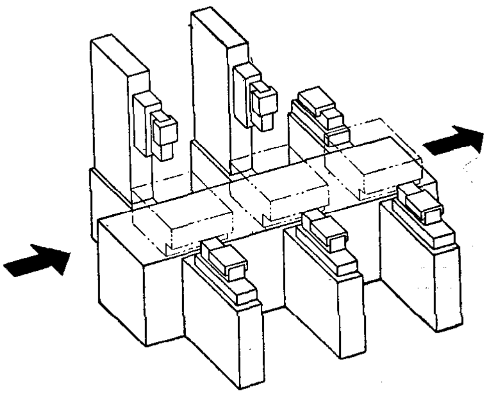
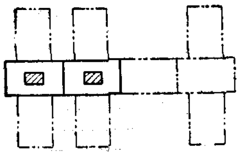
BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

3.1 Single station machine, either one or multiway.

Figure	Graphical Representation	Definitions
	 ONE WAY	A machine on which the machining operations are carried out with the component at a single location (Fig. 1A). The operations may be carried out on one or more sides of the component either simultaneously or in sequence. (Fig. 1B and 1C).
	 TWO WAY	
	 THREE WAY	

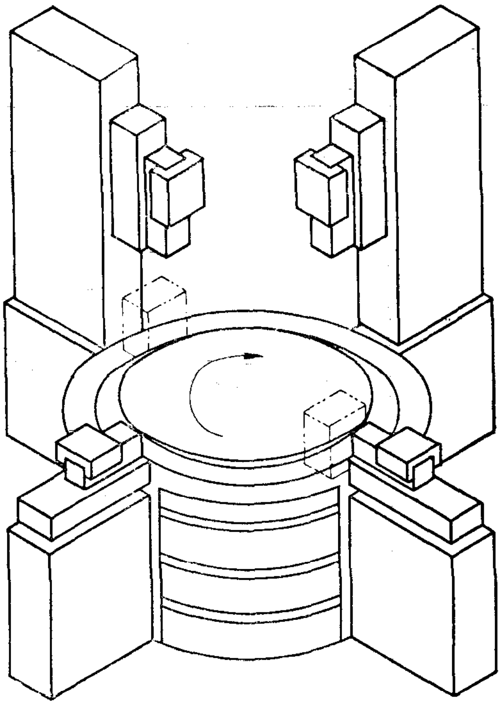
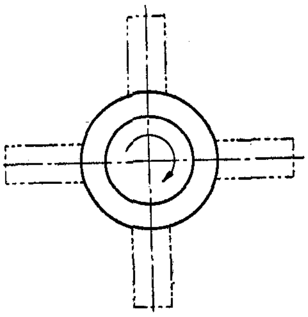
3.2 *Multiple Station Machines* — A composite machine consisting of a number of single station units to which each workpiece is transferred in succession, and at which operations are performed in sequence.

3.2.1 *In-line transfer machine* — Synchronized or non-synchronized.

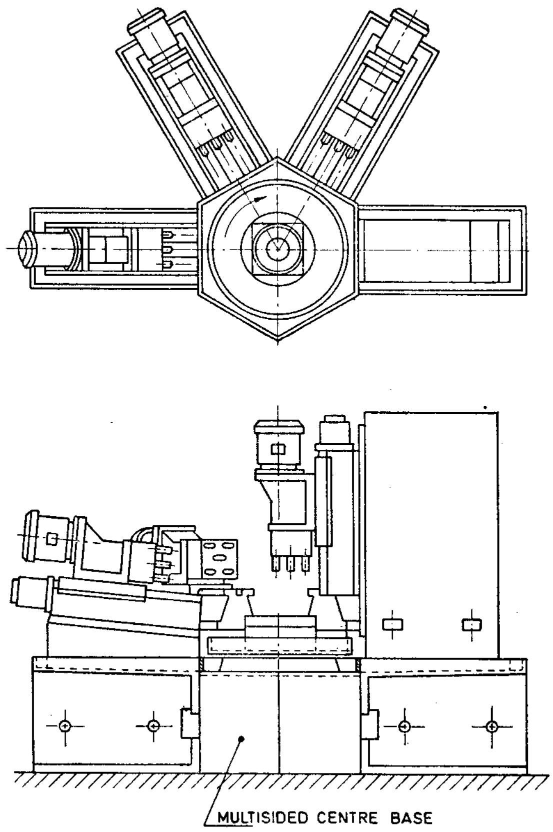
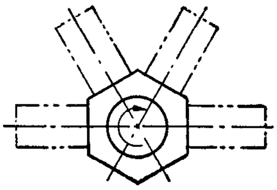
Figure	Graphical Representation	Definitions
		A machine in which the component is transferred to a series of stations by a power operated device. At each station machining operation or inspection may be carried out. Movement of each component can be synchronized or not to each other and the operating cycle at each station. On a non-synchronized transfer machine the movements between stations and the operation of the several stations are not simultaneous. Sufficient space is allocated between each station for storage of the pallets and components.

3.2.2 Rotary transfer machines (or dial type).

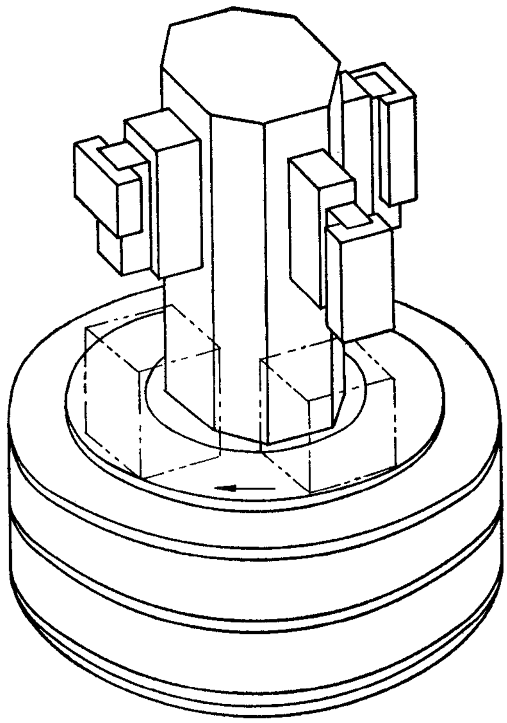
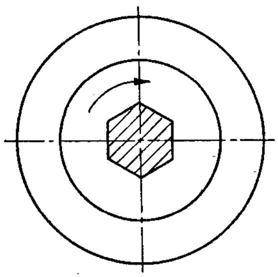
3.2.2.1 Rotary transfer machine with *T*-slot around periphery of circular base.

Figure	Graphical Representation	Definitions
		A machine in which components are transferred sequentially to a series of stations, the components being on a rotary indexing table, with *T*-slots around periphery of base (**3.2.2.1**).

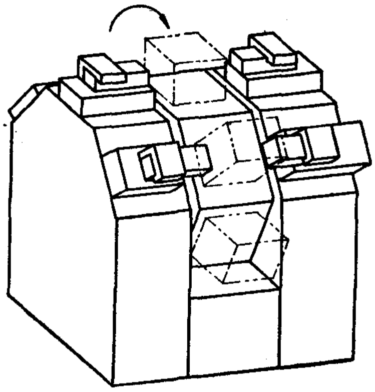
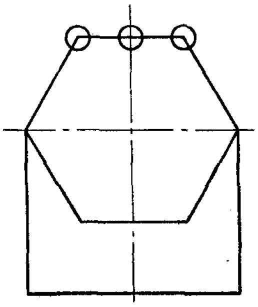
3.2.2.2 Rotary transfer machine with multisided centre base.

Figure	Graphical Representation	Definitions
		**Note** — The centre base can have 4, 5, 6, 7 or 8 sides.

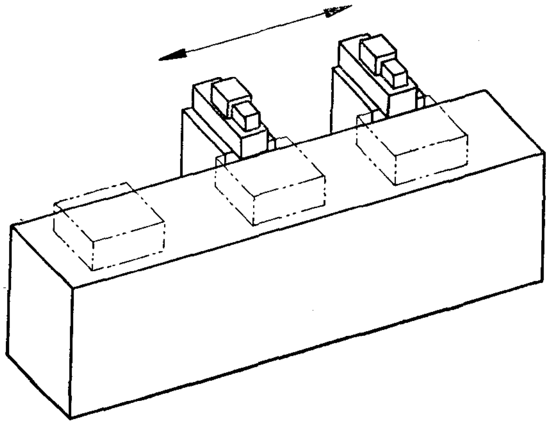
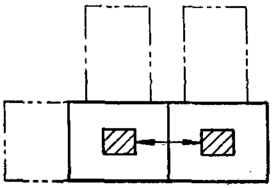
3.2.2.3 Rotary transfer machine with centre column.

Figure	Graphical Representation	Definitions
		A machine in which components are transferred sequentially to a series of stations the components being on a table or pallet which is indexed around a centre column. **Note** — The centre column can have 4 5, 6, 7 or 8 sides.

3.2.3 Trunnion type transfer machine (or drum type), single-or double-end.

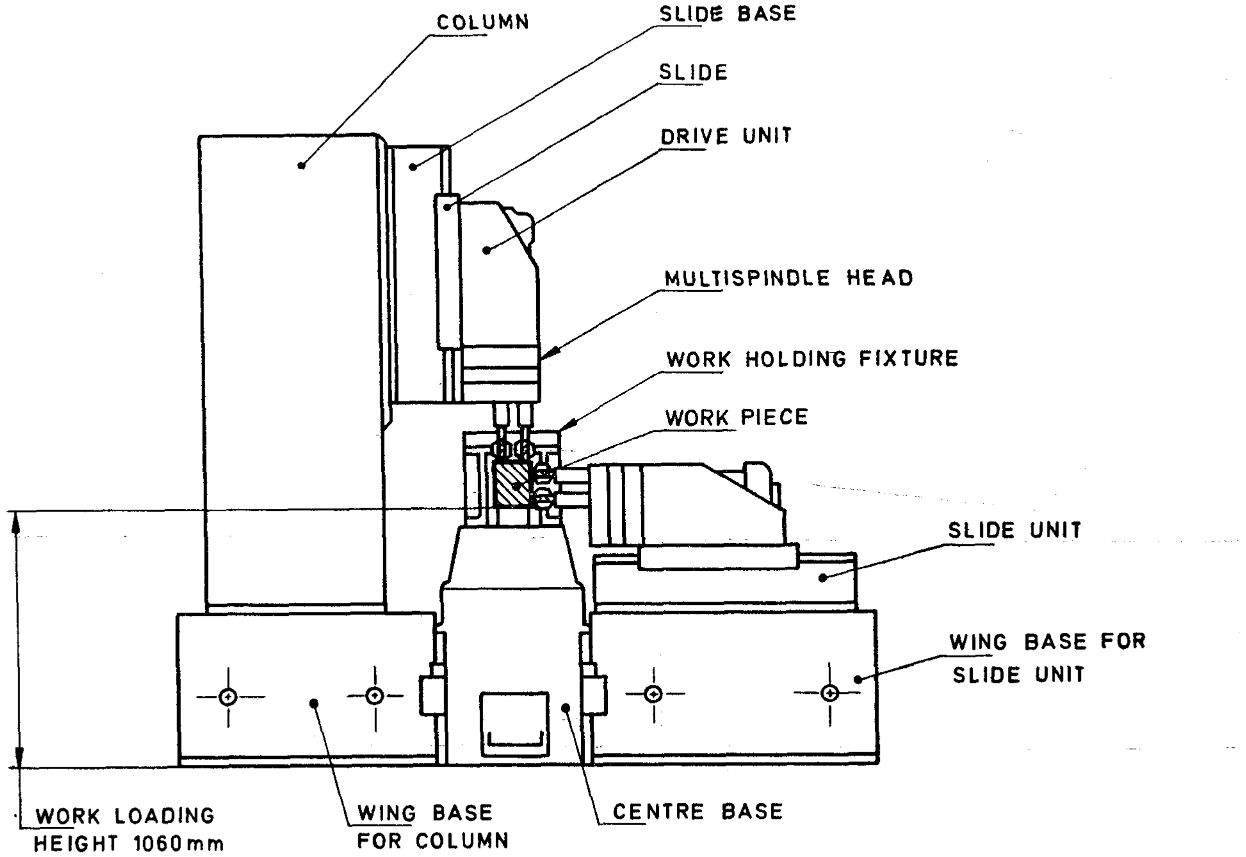
Figure	Graphical Representation	Definitions
		A machine in which the workpieces are carried on a rotary indexing trunnion mounted in a horizontal axis, which is rotated to bring each workpiece to each station in succession.

3.2.4 Shuttle type transfer machine.

Figure	Graphical Representation	Definitions
		A machine in which component is transferred from a load/unload station through a series of machining stations in line returning to the load/unload station at completion of the machine cycle.

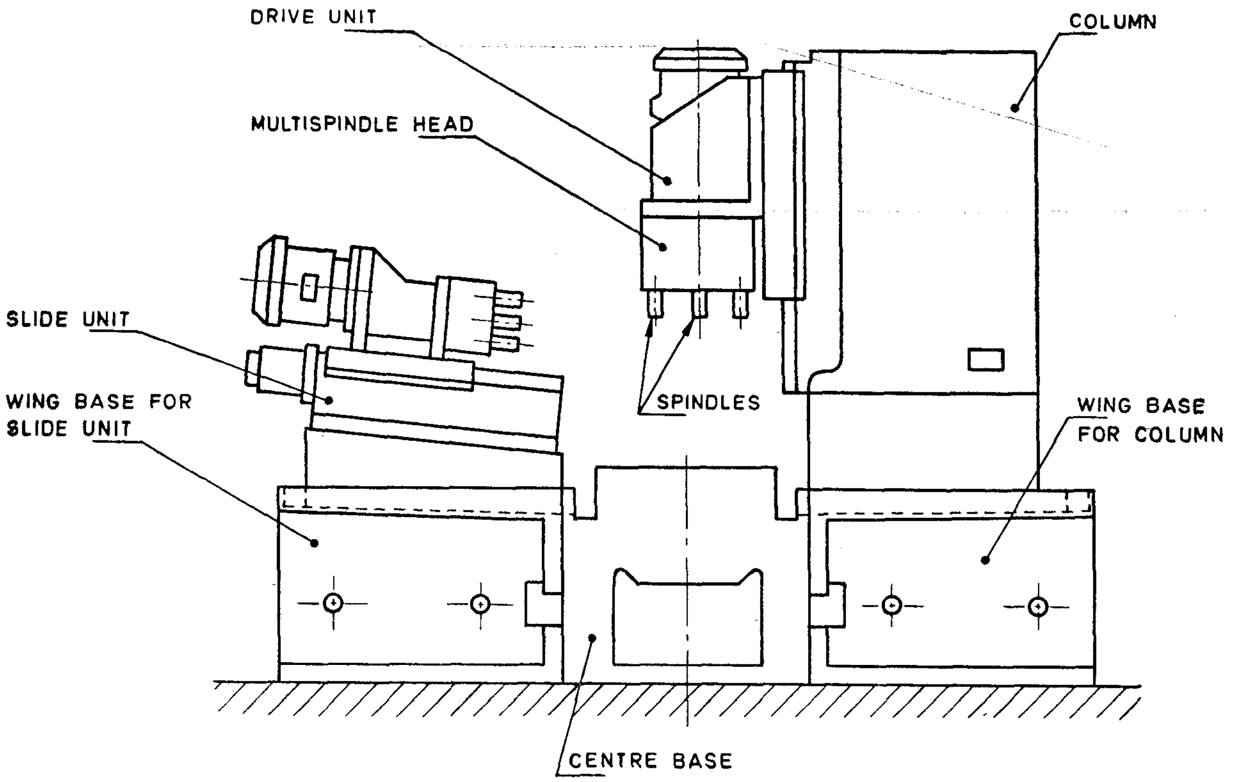
4. Basic Units/Components

4.1 The basic units/components of modular units construction are illustrated below:

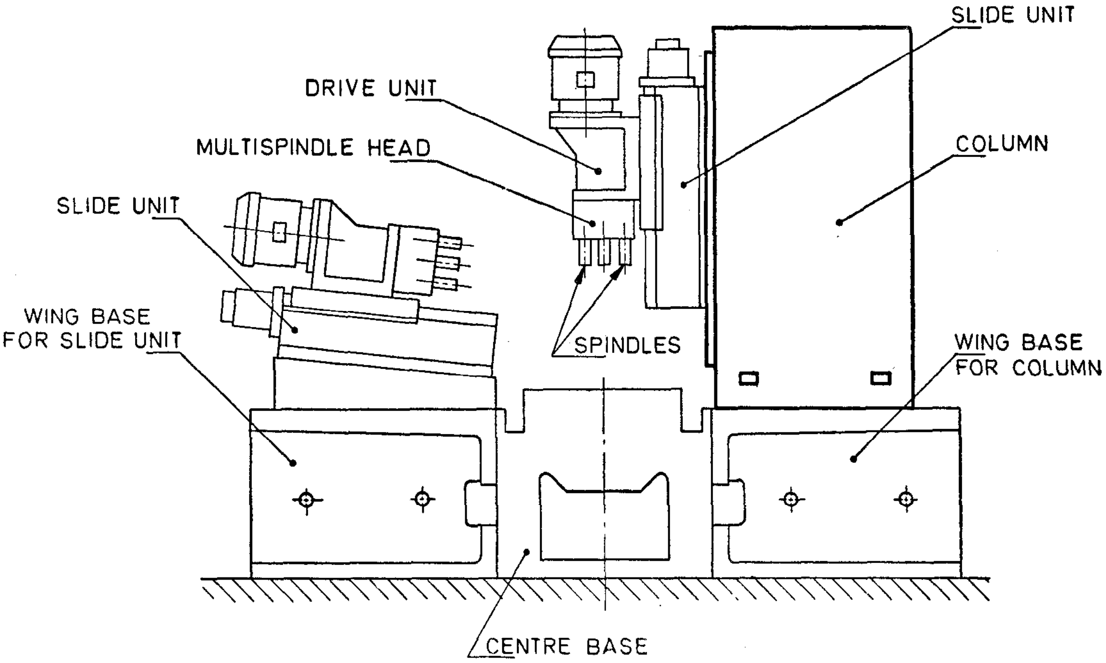


5. Typical Application for Modular Units

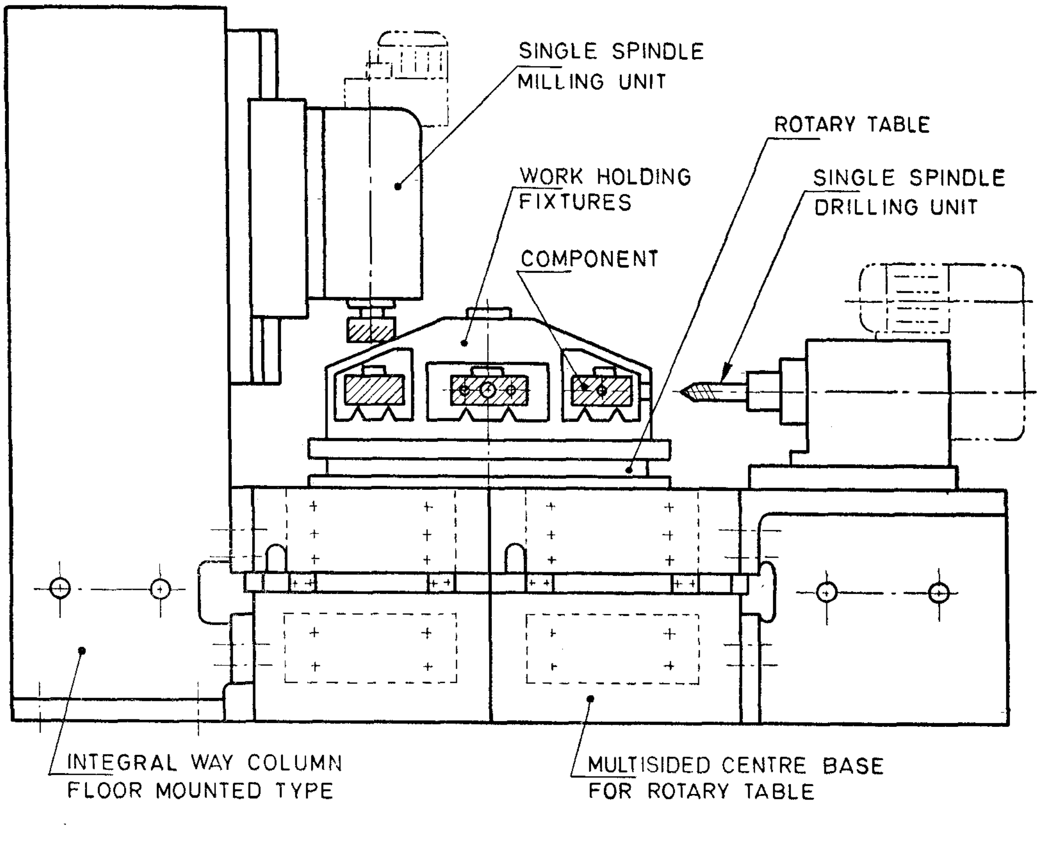
5.1 Slide unit, drive unit, column (integral way) unit wing base for slide unit and wing base for column unit.



5.2 Slide unit, drive unit, column (plain) unit, wing base for slide unit and wing base for column unit.



5.3 Modular units having integral way column (floor mounted type) and multi-sided centre base for rotary table.


SINGLE SPINDLE MILLING UNIT
ROTARY TABLE
WORK HOLDING FIXTURES
SINGLE SPINDLE DRILLING UNIT
COMPONENT
INTEGRAL WAY COLUMN FLOOR MOUNTED TYPE
MULTISIDED CENTRE BASE FOR ROTARY TABLE

EXPLANATORY NOTE

In the preparation of this standard assistance has been derived from the following publications:

ANSI B5.43-1977	Modular machine tools
BS 3884 : 1974	Modular units for machine tools
BS 4640 : 1970	Classification of metal working machine tools by types
DIN 69513-1979	Machine tools, modular units, multisided centre bases for rotary tables, constructural sizes
DIN 69620-1977	Machine tools, modular units, multispindle heads for headstocks according to DIN 69610, connecting dimensions
DIN 69526-1981	Machine tools, modular units, integral way columns, constructional sizes.

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